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THE SECOND INSPECTION OF ACREAGE
UNDER PRODUCTION CONTROL CONTRACTS

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The second inspection to be made upon five percent of the farms surveyed by each compliance supervisor is to determine the acceptability of the first field measurements and to examine the office computation of field areas. Inspectors shall know the instructions under which both the field and office workers have conducted their acreage measurement work, and shall survey by the closed traverse method and check by plotting in accord with the general instructions for the first survey.

The second survey may be made by compass and stadia or any other reliable method of measurement approved by the Wheat Section, but it must be conducted in a manner which will reveal the sources of error in original surveys by the direct comparison of field notes, in order that constant errors such as would result from faulty calibration of wheels or tape may be corrected upon the acreage computations without requiring an actual remeasurement of areas which in other respects are reliably measured. Another probable source of correctable constant error is in the location of boundary lines, since the first survey must be made on many fields in the early stages of crop growth, and the bounds may be extended further by crop growth than the first field worker anticipated. An unintentional bias of judgment might also cause boundaries to be located generously on "contracted acreage" fields and closely on production acreage. These faults should be detected and if of a constant type may be adjusted correctly on the different classes of fields, without requiring a remeasurement of lines.

A source of erratic errors which may be corrected without a complete resurvey is the neglect of slope measurements or a misapplication of directions concerning them.

Inspectors should conduct their work in a manner which (1) discovers unacceptable work, (2) adjusts faulty surveys affected only by constant errors, and (3) expedites the approval of correct surveys. Faulty surveys shall be plotted and compared as to acreage computation before final rejection. Also inspectors must recognize the necessity for checking the reliability of their own judgments concerning the location of boundaries, and the limits of tolerance to allow between the measurements made with compass and stadia and those made with a simple homemade surveying instrument and a measuring wheel. Before condemning the entirety of any field worker's measurements, the inspector shall procure the man's surveying equipment and test its measurements on the fields in question, to check his own limits of tolerance as well as the calibration of the equipment and the reliability of the record.

Tolerance of Field Measurements

Inspectors should be thoroughly acquainted with the methods of measurement used by local field workers, and with the local, as well as general, instructions which they have received, and should recognize that such factors as instructions, equipment, size of fields, and character of topography have an influence on performance which must be considered in the application of tolerance limits. In short, if a resurvey by any other local man is likely to be as faulty as the first survey, the situation may demand a wider tolerance. Such conditions should be reported, however.

The Wheat Section has announced that computed areas of first surveys and second surveys shall check within 1%. The nature of instructions to disregard slopes of from 0° to 8° might cause that much difference between a stadia survey and a wheel survey in hilly country. Both the neglect of slope and the use of wheels tend to produce measurements slightly greater than true distances. Checking measurements must therefore be upon the basis of instructions to the field workers, and not upon true horizontal distances.

In the fixing of boundary locations the length of a side may be increased by a positive error at both ends, or by a negative error at both ends, which might occasionally amount to two feet at each end or a total tolerance of four feet either plus or minus on any line. This would be the same regardless of the length of the side, and should be allowed before applying a percentage tolerance to the measured distance. This will also take care of the compensating error due to reading lines to the nearest foot, link, or tenth of a revolution. The percentage tolerance for measured lines should allow about $\frac{1}{5}\%$ overrun for slopes and $\frac{1}{2}\%$ for wheel measurements on any single side of a field as compared to true horizontal distances. The actual tolerance with respect to measurements in accord with instructions is less than 1%, and under average conditions should be less than $\frac{1}{2}\%$, which is the basis for the 1% area tolerance.

Angle tolerances allow for a difference of $\frac{1}{2}^{\circ}$ on any angle. A decided variation would indicate an error in boundary location, rather than in reading the angle. The sum of the interior angles should check without error, because it has been adjusted.

Office Computations

Office computations should be exact to the nearest hundredth of an acre. Errors of closure should not exceed 1%. All plots should be closed before computation. Office errors need not prevent acceptance of survey reports, but will cause delay of approval of compliance reports until the office record is cleared.

DRAFTING SUPPLIES FOR MEASUREMENT OF FIELDS UNDER PRODUCTION CONTROL CONTRACTS

For surveying, approximately 1 set to every 100 contracts.

1 - set consists of

- 1 - Circular Protractor on Bristol Board, 8" diameter, numbered clockwise only, from 0° to 360° by $\frac{1}{2}^{\circ}$. (No substitution in the circular protractor specifications is acceptable).
- 1 - Semicircular brass protractor $3\frac{1}{2}$ " divided to 1° .
- 1 - 12" Triangular sight made from 1" quarter round or cove mould will do, if the curved side is planed flat.

For office plotting, 1 set to every 300 contracts.

1 - set consists of

- 1 - Civil Engineers Triangular, White Edge Scale, 12" length, full divided: 10, 20, 30, 40, 50, 60 parts to the inch. (The 10, 20, and 40 scales are necessary).
- 1 - Metal triangular scale guard.
- 1 - Semicircular transparent celluloid protractor, 5" diameter, engine divided to $\frac{1}{8}^{\circ}$. (No substitution).
- 1 - 10" celluloid triangle $30^{\circ} \times 60^{\circ}$.
- $\frac{1}{3}$ - doz. 4H pencils.
- $\frac{1}{3}$ - " HB pencils.
- $\frac{1}{3}$ - " ruby pencil erasers.
- 1 - fine mill file, or pencil pointing sandpaper.
- 1 - box $\frac{3}{8}$ " thumb tacks, or holdfast tape.
- 1 - pair shears.
- 1 - 18" x 24" or larger drawing board (or bread board).
- A supply of fine textured, hard surfaced, low cost drawing paper in 30" widths. Good news print paper or wrapping paper will do. Thirty inches is a convenient, but not arbitrary width.

